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CLAIMS:

1. (Previously Presented) Platinum based metal catalyst nano-particles of structural formula PtX, where X is Ru of controlled particle size in the nano-size range of 0.8 to 10 nm and of selected atomic Pt:X percentage ratios ratios in the range of 70:30 to 80:20.

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) The catalyst nano-particles according to Claim 1, and consisting essentially of a PtRu alloy phase of 85:15 Pt:Ru atomic percentage ratio, a Pt phase and a Ru phase.

5. (Previously Presented) The catalyst nano-particles according to Claim 1, wherein the Pt:Ru atomic % ratio is 70:30 and the particle size is 1.5 ± 0.5 nm.

6. (Previously Presented) The catalyst nano-particles according to Claim 1, wherein the Pt:Ru atomic % ratio is 70:30, the particle size is 1.5 ± 0.5 nm, and consisting essentially of a PtRu alloy phase of 85:15 Pt:Ru atomic percentage ratio, a Pt phase and a Ru phase.

7. (Original) The catalyst nano-particles according to Claim 1, wherein the catalyst particles are in the nano-size range of 1 to 5 nm.

8. (Original) The catalyst nano-particles according to Claim 1, deposited on or directly synthesized onto or into the internal porous structure of a support material, resulting in supported catalysts.

metal oxide, carbon based materials, gas diffusion electrodes or electronically conductive ceramics.

10. (Previously Presented) The catalyst nano-particles according to Claim 8, wherein the supported catalysts are in the form of electrodes to be used as anode or cathode in fuel cells for H_2, CO, CH_3OH oxidation reaction and O_2 reduction reactions, respectively.

11. (Previously Presented) A process for making platinum based metal catalyst nano-particles of structural formula PtX, where X is an ad-metal or an ad-metal oxide selected from the group consisting of Ru, Re, Ir, Os, Sn, Sb, Au, WO_x and MoO_x and a mixture thereof, of controlled particle size in the nano-size range of 0.8 to 10 nm and of selected atomic Pt:X percentage ratios, comprising

(a) providing metal precursors including Pt and X ions,

(b) adding the metal precursors to a pH adjusted to 12 to 8 by addition of a strong base solution of ethylene glycol which is used simultaneously as solvent, reducing agent and catalyst particle stabilizer, to form a colloidal solution, and

(c) reacting at elevated temperature to provide a reduction reaction of the metal precursors to the metal and formation of the Pt based catalyst nano-particles of structural formula PtX.

12. (Original) The process of Claim 11, including the additional step of

(d) simultaneously forming and depositing the catalyst nano-particles onto/into a support by adding a support to the synthesis colloidal solution (that comprises the metal precursors and ethylene glycol, according to steps (a) and (b), or by immersing (impregnating) the support in the synthesis colloidal solution before the reduction/deposition process takes place according to step (c).

13. (Currently Amended) The process of Claim 11, additionally comprising the further step of

~~(d')~~ (d) synthesizing the Pt based nano-size catalyst particles in ethylene glycol according to steps (a) to (c) and subsequently applying the particles on/into a support by immersing the support in the stirred colloidal solution or by spraying the nano-sized catalyst particles on/into the support.

14. (Original) The process of Claim 12, wherein the metal precursors are selected from the group consisting of platinum salts, salts of the desired ad-metals/ad-metal oxides and mixtures thereof.

15. (Original) The process of Claim 13, wherein the metal precursors are selected from the group consisting of platinum salts and salts of the desired ad-metals.

16. (Cancelled)

17. (Original) The process of Claim 11, wherein step (b) the initial solution pH is controlled in a range of 12 to 8 by addition of varying amounts of NaOH.

18. (Currently Amended) The process of Claim 16 17, wherein the particle size is in the nano-size range of ~~1~~ 0,8 to 5 nm.

19. (Original) The process of Claim 17, wherein step (c), the reaction is effected at a temperature higher than 140 °C for a few minutes up to 3 hours, or by slowly raising the temperature over a period of several hours.

20. (Previously Presented) The catalyst nano-particles according to Claim 1, wherein the Pt:Ru atomic % ratio is 80:20 and the particle size is 1.2 ± 0.5 nm, and consisting essentially of a PtRu alloy phase of 85:15 Pt:Ru atomic percentage ratio, a Pt phase and a Ru phase.

21. (Previously Presented) The process of claim 19, wherein step (c) the reaction is effected at a temperature up to 200°C.